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SAN FRANCISCO WATER DEPARTMENT
PUBLIC UTILITIES COMMISSION OF SAN FRANCISCO

MANDATORY WATER
RATIONING PROGRAM

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EFFECTIVE MAY 1, 1988

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PUBLIC UTILITIES COMMISSION OF SAN FRANCISCO

MANDATORY WATER
RATIONING PROGRAM

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PROGRAM DESCRIPTION

A. WATER SUPPLY SITUATION

The Hetch Hetchy Water and Power system provides between 80 and 85 percent of the water served in the San Francisco Water Department service area. This year, runoff into the Hetch Hetchy reservoirs is expected to be only 30 percent of normal and may approach 1977 levels, the driest year on record. This situation follows one of the driest years on record, 1987. Current storage levels are high relative to 1976-77 primarily due to decisions made in January, 1987 to drastically reduce power generations. However, snowpack conditions are among the worst recorded and the water supply situation is critical. Runoff into local reservoirs is correspondingly poor and may only be enough to offset evaporation.

Total system storage is at 56 percent of capacity. This storage would be exhausted in approximately 13 months at current consumption rates in the absence of additional runoff. While this picture will change with completion of this year's runoff, the anticipated water supply is clearly inadequate to safely provide for the domestic needs of the 2.1 million people served by the Hetch Hetchy system.

The purpose of any extraordinary conservation program is to conserve water in case of consecutive dry years. Having experienced two consecutive critically dry years, the danger lies in the possibility of a third dry year in 1989. In fact, 1989 must provide greater than average runoff to replenish storage while meeting total water requirements for the Tuolumne River system and service area consumption. The longest dry period on record lasted seven years from 1928-1934. The lack of any proven accuracy in long range weather forecasting requires that water be conserved at a reasonable level in 1988 in case of another dry year.

Water supply planning requires consideration of recent trends in water use, and minimal operating conditions.

Recent Trends in Water Use

1. System-wide water use was below 1976 levels even, with continued growth, until 1987 when it rose 5 percent above 1976.
2. In 1987, the first critically dry year, consumption increased 6% over 1986 despite a voluntary conservation campaign calling for a 10 percent reduction.
3. So far in 1988, consumption is up 10 percent over 1987.

Assumptions and Conditions

1. Runoff in 1988 is projected to total 30 percent of normal for planning purposes, runoff in 1989 is assumed to be just as low.
2. Total system storage on July 1, 1989 should equal or exceed 75 percent of water used during 1987.
3. Consumption at 25 percent below 1987 levels begins May 1, 1988. This level of conservation can be maintained during 1989 without significant adverse economic consequences or hardships to residential consumers.

Using these assumptions and conditions, storage at the end of 1988 would be at 40 percent of capacity, a minimum prudent level. Storage at the end of 1989 would be only 26 percent of capacity. This level would be insufficient to provide for human consumption, sanitation and fire protection purposes. In 1989, detailed projections will again be made looking to 1990. Depending on the success of the conservation program and anticipated runoff, a decision will be made to either ration water at comparable or more severe levels or to rescind water rationing entirely.

The water supply planning analyses led to recommendations to the Commission to declare a water shortage emergency and adopt a conservation program which includes strict water rationing.

B. WATER RATIONING PLAN DEVELOPMENT

The following criteria were used in selecting an appropriate water rationing plan.

1. Equitable availability of water to householders for personal needs whether in apartments or single-family residences and recognition of previous conservation efforts.
2. Reduction in use of water by governmental agencies and businesses with as little danger of increasing unemployment or deteriorating individual businesses as possible.
3. Reasonable allowance for growth of population or businesses including new construction.
4. Maintenance of landscaping at a "survival" level.
5. A workable plan that imposes the least amount of additional cost on the customer.

These criteria, together with the supply and consumption situation, lead to a recommendation for a rationing plan designed to reduce consumption 25 percent compared to 1987. Less than 25 percent will not achieve the necessary water savings while still requiring a mandatory program to limit consumption. More than 25 percent increases the risk of loss of jobs and hardships on residential customers.

The most difficult part of developing a rationing plan is selecting a method to determine residential allocations. There are three basic methods: individual or per capita allocations, uniform allocations by living unit or percentage reductions based on the prior years' consumption history.

Method 1: Individual (Per Capita) Allocations

This type of plan provides that all residential occupants receive the same amount of water per day with some decrease in allocation as the number of residents increase in the living unit. The allocation system provides equal distribution of water to all customers regardless of age or need. In a rationing system where a 50 percent reduction in water consumption is required, and no allowance is made for irrigation, laundry facilities or other individual needs, this type of distribution is feasible and appropriate.

The establishment of individual allocations would require that a census be made to determine the number of people in each living unit in San Francisco and the suburban communities. The accuracy of such a census may be open to question. There is also a problem in obtaining this information because a large number of residences and multiple dwellings are billed to persons who own, manage or operate property but do not reside on the property.

The accuracy of responses to a questionnaire may be unreliable in that some apartment house owners may indicate full occupancy whether full at the time or not. It is possible that those who respond with accuracy will receive less water allocation than those who give false information. Due to the large number of changes in occupancy during the year, it would be a continuing problem to update census information

An individual allocation plan does not allow for a difference in type of dwelling or landscaping. Customers without lawns would receive the same amount of water as those with large landscaped areas. In order to achieve an overall 25 percent reduction in water consumption, we do not intend that watering of all landscaped areas be completely stopped.

Under this plan, dwelling units with laundry facilities would receive the same amount of water as units without laundry facilities. There are a large number of our customers, who, because of their circumstances or employment, may require a larger allocation than the average customer to meet their basic needs.

This type of allocation system cannot equitably distribute water at a 25 percent level of reduction.

Method 2: Uniform Allocations

This type of rationing plan provides the same allocation for each living unit, regardless of the number of people in the unit. An additional allocation is provided each residence for irrigation needs in the summer months.

Advantages:

1. Individual homes would receive the same amount of water plus a set amount for irrigation needs creating a perception of equity.
2. Multiple dwelling units would all be allotted the same amount of water per unit adding to the perception of equity.
3. A census would not be required.
4. Easiest and least expensive to establish and administer.

Disadvantages:

1. The plan is inequitable to most customers. Occupancy varies within each dwelling unit and water would not be apportioned equitably or to the needs of the customers.
2. Some customers would receive an allocation in excess of their normal needs leading to waste, and customers with large families may be required to reduce their consumption below that necessary for health, sanitation and safety.
3. The required 25 percent overall reduction would be difficult to achieve. Allotments must be large enough to allow for an occupancy of three or four when there are only one or two occupants. It may also be necessary to increase a large number of individual allocations.
4. Dwelling units with laundry facilities would be allotted the same amount of water as those units without laundry facilities.

As with individual allocations this method cannot equitably distribute available water supplies and, moreover, makes conservation of supplies more difficult.

Method 3: Percentage Allocations

This method of water rationing determines allocations as a percentage of past use. This method is recommended for adoption. For implementation in 1988, allocations are based on water use during calendar year 1987 for each business and residential customer.

Using a formula which calculates the difference between winter consumption, essentially inside water use, and the summer increase in consumption due to irrigation, allocations are determined by reducing inside water use 10 percent and outside water use by 60 percent. The same formula is applied to the consumption history of the suburban resale customers to establish allocations at the wholesale level. The resale customers can allocate water within their respective service areas in any manner they choose provided the allocation determined at the wholesale level is not exceeded.

The staff from the Water Department, and a committee representing the suburban resale customers, started planning a systemwide water rationing plan in January 1988. Discussions had progressed to the point that there was unanimous agreement on the use of prior consumption history to determine allocations and on the need to make major reductions in irrigation use. These factors would support the objectives of protecting jobs and business and minimizing hardship on residential customers. An agreement was also reached on a methodology for determining irrigation use, basically the difference between summer and winter use for each customer. While the recommended rationing plan is significantly different from the draft plan reviewed by the suburban resale customers in some respects, all of the major criteria and allocation methods agreed on by the committee have been incorporated in this plan.

As with the other methods, there are advantages and disadvantages to this proposed plan which are listed below:

Advantages:

- a) The largest water users are reduced the most.
- b) No census is required.
- c) Variations in weather conditions throughout the City and suburban area be taken into account.
- d) Variations in individual needs for laundry facilities and personal needs will be accounted for.

Disadvantages:

- a) Some customers may receive allocations higher than similar customers because of their past water usage habits.
- b) The number of individuals in each dwelling is not directly considered.

The implementation plan provides means to mitigate these disadvantages on a case-by-case basis.

This system-wide rationing plan meets the criteria listed above while providing the water savings necessary in case of a third dry year. Jobs and businesses are protected and the hardship on residential customers is minimized. The plan is equitable and water consumers are treated in a like manner whether in San Francisco or the suburban areas. Previous conservation efforts are rewarded in that the largest reductions being made are in irrigation use, the greatest source of water waste.

C. IMPLEMENTATION PLAN

With the approval of the Commission, the rationing plan, including the water use restrictions, will become effective May 1, 1988 and be in effect until rescinded or modified. All customers will be notified of individual allocations by June 1, 1988. Rate increases and a schedule of excess use charges will be brought to the

Commission for approval at the regularly scheduled meeting on May 24, 1988. Excess use charges, the primary means of enforcing the water allocations would then become effective on July 1, 1988 or as soon thereafter as each customer had one full billing cycle following notification of their allocation.

The rationing plan includes a procedure whereby any customer who feels they are not treated equitably under this allocation method or whose needs change can write to the Department to request a change in their water allocation. Simple pre-printed forms will be provided to make it easy for customers to apply for an increased allocation. The request will be promptly investigated and the customer notified. No rationing plan can account for all situations but the exception procedure allows the Department to provide for each individual circumstances.

Restrictions on water waste and certain water uses are a necessary part of the rationing plan. In times of scarcity, lower priority uses of water such as washing sidewalks must be restricted. The exception procedure allows for lifting of the restrictions in situations where public health or safety considerations require it. While the rationing plan includes allowing water for construction and growth, the restrictions include requirements for conservation measures, particularly low water use landscaping, in new projects.

Service to the Cities of San Jose and Santa Clara

The Department is also recommending as part of the water conservation program that service to the Cities of San Jose and Santa Clara be interrupted for the duration of the water shortage emergency. This recommendation is being made on the basis that 1) the water supply contracts with these cities allow interruption of service, (2) these cities have other sources of water which currently supply the majority of their needs, 3) information provided by these cities in the course of contract negotiations during 1986 indicated sufficient water supply was available in the event of termination of service by San Francisco, and 4) the Hetch Hetchy supply must be conserved as much as possible for those cities and communities, including San Francisco, that are totally dependent on it. The total supply to San Jose and Santa Clara is 6.95 milgal per day. This amount represents the combined purchases of the 10 smaller of the 28 permanent resale customers and is a necessary part of the plan to reduce consumption by 25 percent.

San Jose and Santa Clara have been notified that this recommendation would be made to the Commission. In the interest of making the transition as smooth as possible and verifying that termination of service would not cause an undue burden, each city was invited to provide any information they thought pertinent to this recommendation to Department staff.

Budget

The Water Rationing Program budget is an eight (8) month budget based largely on experience gained from the 1977 water supply emergency. The proposed funding of this budget is through reallocations of

existing funds in the FY 87-88 budget and supplemental funds requested in a resolution amending the FY 88-89 budget request. The total program costs are \$1,038,410 with \$389,630 from FY 87-88 and \$648,780 to be added to the FY 88-89 budget request.

D. NECESSARY ACTIONS

The attachments to this explanation include a resolution required for approving rationing both within San Francisco and in the suburban areas and the supporting budget, the recommended rationing plan, a chart showing monthly allocations on a systemwide basis, graphs showing projections of storage and water consumption through 1989, information on the various activities which make up the complete conservation program and detailed budget and funding information.

Approval of the attached resolution will declare a water shortage emergency, adopt a conservation program which includes rationing at both the retail level in San Francisco and at the wholesale level with the suburban customers, allow interruption of temporary water service to the cities of San Jose and Santa Clara and provide funding to operate the program for an 8 month period.

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WATER RATIONING RULES AND REGULATIONS

The intent of this rationing program is to reduce systemwide water demand by 25% compared to 1987 with minimum impact on business, employment and quality of life. This is achieved by making major reductions in the amount of water used for irrigation and imposing relatively minor reductions on water used for business and domestic purposes. The allocation plan accounts for the needs of individual consumers and communities while treating all consumers supplied by the Water Department in a like manner. This plan is designed to insure that at a minimum, there will be a sufficient supply of water available for domestic use, sanitation and safety.

ALLOCATION PLAN

The following allocation plan governs all water customers served by the San Francisco Water Department. The plan is based on prior water use by individual customers with calendar 1987 used as the base year.

City and County of San Francisco

These allocations govern customers served within the City and County of San Francisco and customers outside the City and County served directly by San Francisco.

Inside Use. For bi-monthly accounts the allocation for each billing period for inside use will be 90% of the average consumption for billing periods ending in January, February, March and December, 1987. For monthly accounts the allocation for each billing period will be 90% of the average consumption for the four billing periods ending in the above months.

Outside Use. For all accounts the allocation for outside use for billing periods ending in April through November, will be 40% of the difference between the average consumption calculated for inside use and actual consumption for the same period in 1987.

Total Allocation. The allocations for each billing period will be the total of the allocations for inside and outside use.

Maximum Allocation for Single Family Residences. No single family residence shall receive an allocation of more than 4,000 cu. ft. bimonthly.

Suburban Resale Customers

This allocation plan governs all customers purchasing water for resale.

Customers Without Limits on Annual Purchases. Allocations will be on a monthly basis. Allocations for each month will be 90% of the calculated average of the purchases for billing periods ending in January, February, March and December, 1987, plus, for billing periods ending in April through November, 40% of the difference between this calculated average and actual purchases for the same period in 1987.

Customers With Limits on Maximum Annual Purchase. Those suburban resale customers with average annual maximum limits included in their individual contracts will reduce those annual purchases to no more than 75% of the average annual maximum limit. Maximum monthly purchases will be limited to one-twelfth of the average annual maximum limits. Minimum required purchases will be reduced to the extent necessary for compliance with this allocation plan.

Allocation Plans of the Suburban Resale Customers. Each suburban resale customer may use the same allocation plan contained in these Rules and Regulations or may modify it as they deem necessary for their respective service areas.

Allocations Where No Past History Exists

When water records for calendar year 1987 are not available, do not cover various portions of the year, or do not allow for establishment of equitable allocations, earlier records or those of customers with similar water uses may be used in order to set or adjust individual allocations.

REGULATIONS AND RESTRICTIONS

The following regulations and restrictions govern all customers served by the San Francisco Water Department.

City and County of San Francisco.

These regulations and restrictions apply to customers served within the City and County of San Francisco and customers outside the City and County served directly by San Francisco.

Water Use Regulations and Restrictions

1. Water waste, including but not limited to, flooding or runoff in gutters or streets is prohibited.
2. Hoses shall not be used to clean sidewalks, driveways, patios, parking lots or other hard-surfaced areas.
3. Hoses used for washing of cars, boats, trailers or other vehicles must have positive shut-off valves.
4. Restaurants shall serve water to customers only on request.
5. Water used for cooling must be recycled to the extent possible.
6. No water shall be used to clean, fill or maintain levels in decorative fountains.

7. No additional water will be allowed for new landscaping or expansion of existing facilities unless low water use landscaping designs and irrigation systems are employed.
8. A water service connection for new construction shall be granted only if water saving devices are incorporated in interior plumbing fixtures and landscaping is kept to a minimum and installed as in Rule 7 above.
9. Construction water for consolidation of backfill, dust control or other non-essential uses shall be denied if other methods or water sources can be used.
10. Irrigation of lawns, playfields, parks, median strips, golf courses, cemeteries and landscaping of any type with potable water shall be reduced by at least 60% as compared to the similar calendar period during 1987.

Enforcement. Violation of any of these regulations by any customer may, after one written warning and in accordance with all applicable laws and legal restrictions, result in the installation of a flow restricting device in the service line of the customer or the shut-off of water service. The customer shall bear the cost of the enforcement action.

Suburban Resale Customers

Customers purchasing water for resale are strongly encouraged to adopt water usage restrictions and enforcement programs similar to those employed in San Francisco.

New Construction. Additional water may be granted for new construction providing water saving devices are incorporated in interior plumbing fixtures and any landscaping is kept to a minimum and incorporates low water use landscaping designs and irrigation systems.

Exceptions

Exceptions to these regulations and restrictions may be made for the protection of public health or safety or undue hardship to the applicant including adverse economic impacts such as loss of production or jobs. Any exceptions are subject to, the following requirements and procedures:

1. It must be shown that there are no alternatives to the use of water.
2. Applications must be in writing to the Commercial Division Management, San Francisco Water Department, 425 Mason Street, San Francisco, CA 94102.
3. Water used under this exception procedure must be efficiently used without waste.
4. Approval of exceptions for non-residential customers will require verification of use of all appropriate conservation measures.
5. Denials of application may be appealed to the General Manager of the Water Department whose decision will be final.

SAN FRANCISCO WATER DEPARTMENT
1988 WATER CONSERVATION PROGRAM

Program Objective: Reduce systemwide water demand by 25% compared to 1987 with minimum impact on business, employment and quality of life.

- * Water Conservation Activities
- * Water Conservation Program Budget Supplementals
- * Budget Supplemental Funding Plan

1988 WATER CONSERVATION ACTIVITIES

The Public Utilities Commission through its Water Department established an ongoing water conservation program in 1986. In 1987 it added an administrator and some program funds. The FY 88-89 budget request includes additional and expanded programs. The critical need to reduce demand in 1988 emphasizes the importance of this program and will require increases in the program's scope and outreach. The easiest way to stay within the bounds of the rationed allotments is by eliminating waste. Conservation methods do that.

The conservation activities focus on public information and education. They are aimed at reaching the greatest amount of people, the large users, and schools.

PROGRAM HIGHLIGHTS

Public Information

- o Train all Water Department employees engaged in customer service functions on rationing program rules and regulations.
- o Development and distribution of brochure for all City businesses and residences to explain the need for rationing, the effect on individual customers and methods of saving water.
- o Development of public information materials in Chinese and Spanish.
- o Inform each customer of their water allotment.
- o Conservation campaign to include billboards, buses, libraries, city buildings, schools, newspapers and television.
- o Specialized informational brochures for apartment houses, certain businesses and industries, schools and large irrigation customers.
- o Information on water conservation in gardens.
- o Community outreach programs using speakers bureau with video and slide presentations on the water supply system and conservation.
- o Inclusion of a water conservation message in all water bills.
- o Develop a water conservation logo and slogan.

Schools Program

- o Distribute water conservation materials and Hetch Hetchy video presentation.
- o Provide student field trips of water department facilities.
- o Theatrical presentations on water conservation in selected schools.
- o Coordinate program with suburban wholesale customers and provide educational coordinator for development of conservation curriculum.

Retrofit Program

- o Support programs to install toilet dams, low flow showerheads, aerators in low income housing in San Francisco.
- o Make water savings kits available to customers at cost.

Suburban Resale Customers

- o Monitor progress and assist in the implementation of their conservation activities.
- o Assist in planning ways to eliminate waste and improve irrigation efficiency.
- o Develop systemwide public information program.
 - 1. Program development, promotion and distribution of public information materials, speakers' bureau engagements, promotional work with media.
 - 2. Design and preparation of conservation brochure and billing inserts - 3 @ \$2,500.
 - 3. Preparation of joint press releases, posters, billboards and public service messages for radio and TV.
 - 4. Design and preparation of presentations in video 16mm and slide formats for various audiences.

Large Water Users

- o Make direct contact with large water users in San Francisco to offer information and assistance in water conservation.
- o Individual letters to large users including government agencies.
- o Monitor the water consumption of individual customers.
- o Survey customers that use large amounts of water for cooling or processing to see that recycling is at the maximum level.

Landscaping/Irrigation Use

- o Seek inclusion of conservation elements in the land use planning process in San Francisco and the suburbs.
- o Conduct landscape audits for large irrigation customers (e.g. golf courses, cemeteries, schools, parks).
- o Develop weather information system for total service area in coordination with existing State Program and develop public information program.
- o Promote low water use landscaping principles.
- o Provide demonstration gardens on low-water-use landscapes (e.g. Golden Gate Park Arboretum).
- o Work with the San Francisco Planning Department to establish specific guidelines for landscaping that reduces turf grass and utilizes more native plants.

General

- o Promote water conservation in City departments.
- o Eliminate water waste through aggressive enforcement of water use restrictions.

WATER CONSERVATION PROGRAM BUDGET SUPPLEMENTAL

This is an 8-month budget for the period June through January, 1989. The budget is based largely on experience gained during a similar water supply emergency in 1977. This budget is a summary of all the additional costs associated with the expanded conservation and rationing program. The next section will explain and identify the funding sources.

Personnel

The personnel will be used to staff a water rationing section within the Water Department's Commercial Division at 425 Mason Street. The clerical staff will respond to customer inquiries, provide conservation information and process requests for increased water allotments and exceptions to the regulations and restrictions. The field personnel will inspect commercial and industrial customers and other large water users to provide information on conservation measures and verify requests for increased water allotments.

An additional leak repair crew will be used at the City Distribution Division to provide prompt repair of all leaks. This is necessary to conserve water and maintain public credibility of the program.

An additional sanitary engineering technician will be used by the Water Quality Division to handle the expected increase in customer service requests for water analysis, cross connection control and system monitoring.

1-4310	Commercial Division Assistant Supervisor 1611 B/W x 16 pay periods	=	25,776
1-7317	Senior Water Service Inspector 2014 B/W x 16 pay periods	=	32,224
4-7316	Water Service Inspectors 4 (1740 B/W x 16 pay periods)	=	111,360
2-1480	Principal Water Services Clerk 2 (1152 B/W x 16 pay periods)	=	36,864
8-1478	Senior Water Services Clerk 8 (1047 B/W x 16 pay periods)	=	134,016
1-6106	Sanitary Engineering Technician 1881 B/W x 16 pay periods	=	30,096
2-7388	Utility Plumber 2 (1740 B/W x 16 pay periods)	=	55,680
1-7514	Laborer (1147 B/W x 16 pay periods)	=	<u>18,352</u>
		sub-total	469,368
		25% fringes	<u>117,342</u>
		TOTAL	\$586,710

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Overtime

Overtime is needed to handle the expected work loads for processing requests for increased water allocations. Timely response is critical for program credibility and workload management. There will be a lag in the Department's ability to hire additional personnel and existing personnel will be required to work longer hours to make timely response possible.

\$50,000

Engineering Services

Specialized engineering services are needed to expand the use of groundwater in San Francisco. The work will consist of quantifying the output of existing wells and pumps identifying additional uses and developing a preliminary design for transmission facilities.

\$25,000

Data Processing

Additional analysts and programmers will be required to develop systems to calculate water allocations, notify customers, monitor consumption and apply penalty rates for excessive consumption

\$25,000

Vehicle Rentals

One utility truck and seven vehicles will be needed to provide the field personnel with a means to get around their designated service areas.

\$40,000

Other Rentals

The clerical staff will require equipment rentals and a copy machine. One garage rental will be needed. The additional leak crew at the City Distribution Division requires a compressor and miscellaneous tools.

\$14,700

Other Contractual Services

Mailing services to reach all water users are needed. Also, miscellaneous services such as graphics, map reproductions, signs, etc. will be required for many different facets of the program. Additional water quality testing will be required as part of the expansion of groundwater use and in response to public requests for testing wells.

\$30,000

Postage

Postage is needed for two direct mailings to all customers and households in San Francisco.

\$70,000

Printing

A wide-ranging public information campaign is a necessary part of a rationing program. Customers and the general public must be informed about the nature of the water supply emergency, the need for water conservation, conservation methods and the rules and regulations of the rationing program. Printing funds will allow preparation and production of direct mailings, 4 billing inserts, posters, billboards, and brochures for particular classes of water users.

\$50,000

Other Current Services

A small amount for miscellaneous current services such as delivery services, bridge tolls, etc. would be required.

\$ 1,000

Materials and Supplies

The staff will need to be provided with supplies and tools to perform their functions. There will also be forms and mailing envelopes needed to inform customers about the program and give them their allotments. The purchase of specialized conservation brochures to respond to information requests from the general public will also be needed.

\$35,000

Systemwide Programs in Cooperation with the Suburban Resale Customers.

- o Program development, promotion and distribution of public information materials, speakers' bureau engagements, promotional work with media.
- o Design and preparation of conservation brochure and billing insert - 3 @ \$2,500.
- o Preparation of joint press releases, posters, billboards and public service messages for radio and TV.
- o Design and preparation of presentations in video 16mm and slide formats for various audiences.

\$ 75,000

Equipment

Some equipment may be needed that cannot be anticipated now. The ability to purchase small equipment such as: a video monitor, a slide projector or a film projector that can be brought to speaking engagements; a video camera for training; or more pressure recorders for field inspection.

\$ 4,000

Data Processing Equipment

Twelve terminals are needed to give the clerical staff customer information and allow them to make on-line adjustments and corrections.

The Water Quality Division also needs two portable computers to be able to do analyses in the field and at remote locations such as Rock River or Tesla Portal.

\$32,000

PROGRAM TOTAL **\$1,038,410**

Budget Supplemental Funding Plan

The funding plan for the Water Conservation and Rationing Program will be funded by the Water Department from two sources.

Recognizing the need to keep rate increases to a minimum and also acknowledging the need to begin immediately, the Department plans to use existing funds from its FY 87-88 operating budget to fund the costs through June 30, 1988. Funds that have been identified as savings or lower priority needs will be reallocated and used. Salary savings will be used to pay for the temporary personnel. The estimated cost is \$389,630.

Funds for the program after July 1, 1988 are being requested through an amendment to the FY 88-89 budget request. These funds will be added to the Water Conservation programmatic budget request. The estimated cost of this request is \$648,780. The breakdown by object is as follows:

100	Overtime	\$ 25,000
020	Temporary Salaries	494,080
102	Professional Services	25,000
109	Other Contractual Services	58,700
120	Other Current Services	20,000
130	Materials & Supplies	10,000
231	Data Processing Equipment	<u>16,000</u>
	TOTAL	\$ 648,780

1988 SYSTEMWIDE WATER ALLOTMENT SUMMARY

22 APRIL 1988

SAN FRANCISCO	JANUARY	FEBRUARY	MARCH	APRIL	MAY	JUNE	JULY	AUGUST	SEPTEMBER	OCTOBER	NOVEMBER	DECEMBER	TOTAL
1987 WATER CONSUMPTION (IN CCF'S)	3,206,948	3,959,276	2,965,747	4,084,777	3,860,959	4,212,158	3,904,486	4,767,957	3,669,247	4,377,776	3,181,605	3,963,669	46,154,605
AVERAGE JAN-FEB-MAR-DEC	3,523,910	3,523,910	3,523,910	3,523,910	3,523,910	3,523,910	3,523,910	3,523,910	3,523,910	3,523,910	3,523,910	3,523,910	42,286,920
DIFFERENCE (See Note 1)	(316,962)	435,366	(558,163)	560,867	337,049	688,248	380,576	1,244,047	145,337	853,866	(342,305)	439,759	3,867,685
1988 ALLOTMENT													
90% INSIDE	3,171,519	3,171,519	3,171,519	3,171,519	3,171,519	3,171,519	3,171,519	3,171,519	3,171,519	3,171,519	3,171,519	3,171,519	38,058,228
40% OUTSIDE	0	0	0	224,347	134,820	275,299	152,230	497,619	58,135	341,546	0	0	1,683,996
TOTAL	3,171,519	3,171,519	3,171,519	3,395,866	3,306,339	3,446,818	3,323,749	3,669,138	3,229,654	3,513,065	3,171,519	3,171,519	39,742,224
													=====
											SAVINGS		13.89%
													=====

Note 1: () Indicates 1987 consumption Less Than JAN-FEB-MAR-DEC AVG.

SF totals include retail and non-pay municipal accounts outside San Francisco

SUBURBAN	JANUARY	FEBRUARY	MARCH	APRIL	MAY	JUNE	JULY	AUGUST	SEPTEMBER	OCTOBER	NOVEMBER	DECEMBER	TOTAL
1987 WATER CONSUMPTION (IN CCF'S)	4,946,367	4,769,619	4,732,890	6,326,911	8,800,707	9,300,444	9,641,134	9,866,608	9,322,053	8,314,728	6,253,252	4,818,121	87,092,834
AVERAGE JAN-FEB-MAR-DEC	4,816,749	4,816,749	4,816,749	4,816,749	4,816,749	4,816,749	4,816,749	4,816,749	4,816,749	4,816,749	4,816,749	4,816,749	57,800,988
DIFFERENCE (See Note 1)	129,618	(47,130)	(83,859)	1,510,162	3,983,958	4,483,695	4,824,385	5,049,859	4,505,304	3,497,979	1,436,503	1,372	29,291,846
1988 ALLOTMENT													
90% INSIDE	4,335,074	4,335,074	4,335,074	4,335,074	4,335,074	4,335,074	4,335,074	4,335,074	4,335,074	4,335,074	4,335,074	4,335,074	52,020,889
40% OUTSIDE	0	0	0	604,065	1,593,583	1,793,478	1,929,754	2,019,944	1,802,122	1,399,192	574,601	0	11,716,738
TOTAL	4,335,074	4,335,074	4,335,074	4,939,139	5,928,657	6,128,552	6,264,828	6,355,018	6,137,196	5,734,266	4,909,675	4,335,074	63,737,627
													=====
											SAVINGS		26.82%
													=====

Note 1: () Indicates 1987 consumption Less Than JAN-FEB-MAR-DEC AVG.

TOTAL 1987 CONSUMPTION SYSTEMWIDE: 137,229,170 CCF's (Including Santa Clara and San Jose)
TOTAL 1988 ALLOTMENT SYSTEMWIDE: 103,479,851 CCF's (Zero Allotments to Santa Clara and San Jose)

TOTAL SAVINGS SYSTEMWIDE: 33,749,319 CCF's

TOTAL PERCENTAGE SAVINGS: 24.59%

PROJECTED WATER USE AND RESERVOIR STORAGE

Because 1987 provided low precipitation and runoff, the PUC curtailed power production beyond that generated in the process of meeting water requirements, and the Water Department instituted a voluntary water conservation program. Given the continued dry weather in 1988, if water consumption in 1988 were comparable to 1987 levels, supplies would be seriously depleted, and the system would be unable to withstand another year of below average runoff. To date, water use has exceeded 1987 levels by 10 percent.

The ability to satisfy these projected water requirements has been reexamined in light of actual runoff conditions and the higher than projected water use during the unseasonably hot periods experienced and anticipated this year. Water supply planning also considered the uncertainty in runoff that may be obtained next year.

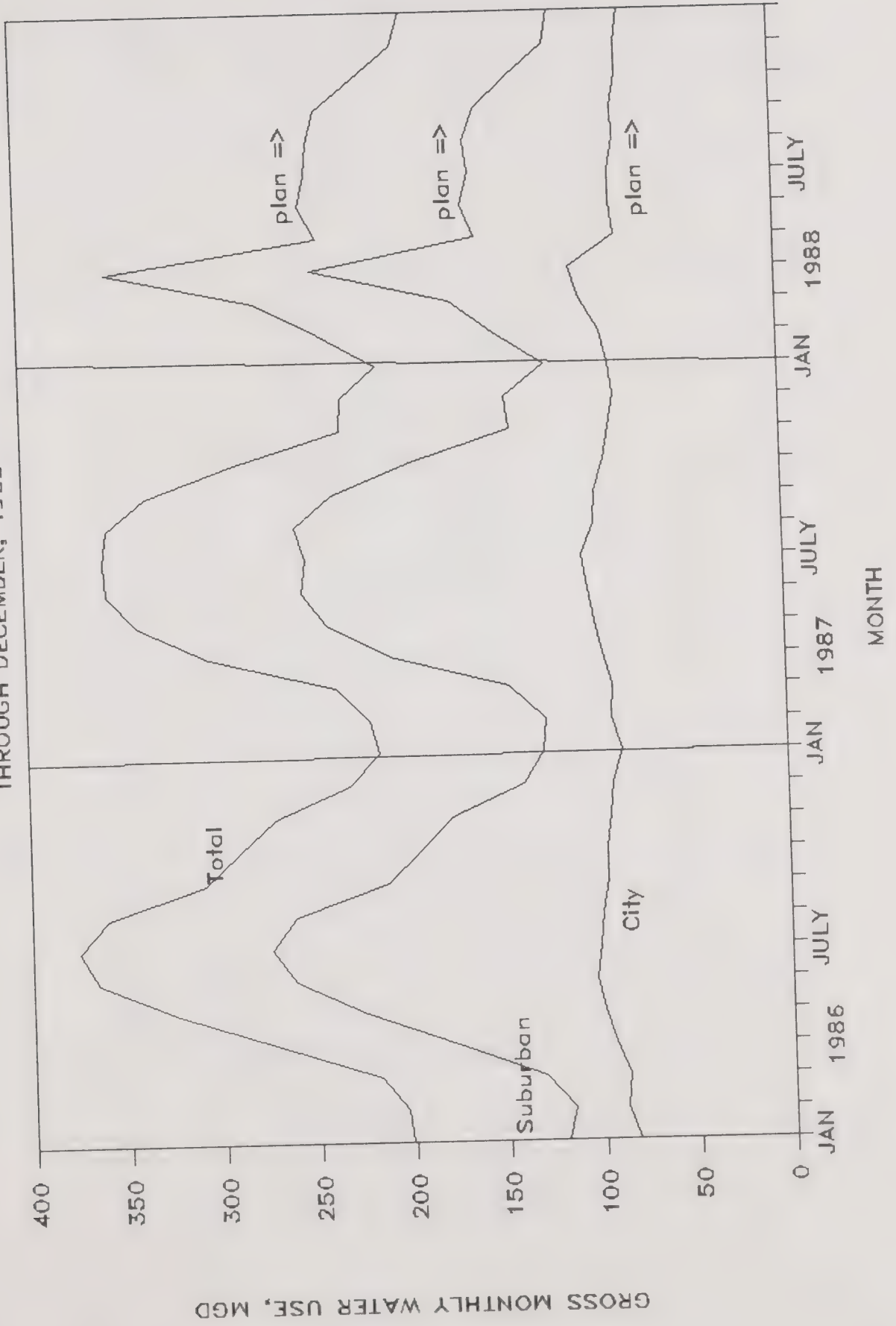
If water use in 1988 and 1989 were no more than in 1987, total system storage would be only 26 percent of capacity, at the end of 1988, and another dry year would deplete all storage by at least April, 1989.

Figure 1 shows average monthly rates of total system water use, and provides the 1987 pattern of water use for comparison. The line labeled Allocation Plan reflects the results of the recommended water conservation program. The figure also shows actual water deliveries to date since January, 1988. Clearly, a dramatic reduction in water use, of approximately 25 percent, is required.

Figure 2 shows the impact of this conservation program on reservoir storage. Values representing beginning-of-month storage levels are indicated for total mountain, total local and total system storage. For these analyses, runoff during 1989 is assumed comparable to this year's runoff. Storage at the end of 1988 would be 33 percent of capacity. During 1989, water use would continue to exceed runoff, and storage would be further depleted. At the end of 1989, storage would drop to minimum operating levels, indicating that if another equally dry year were experienced, more stringent water conservation measures would be required during that year.

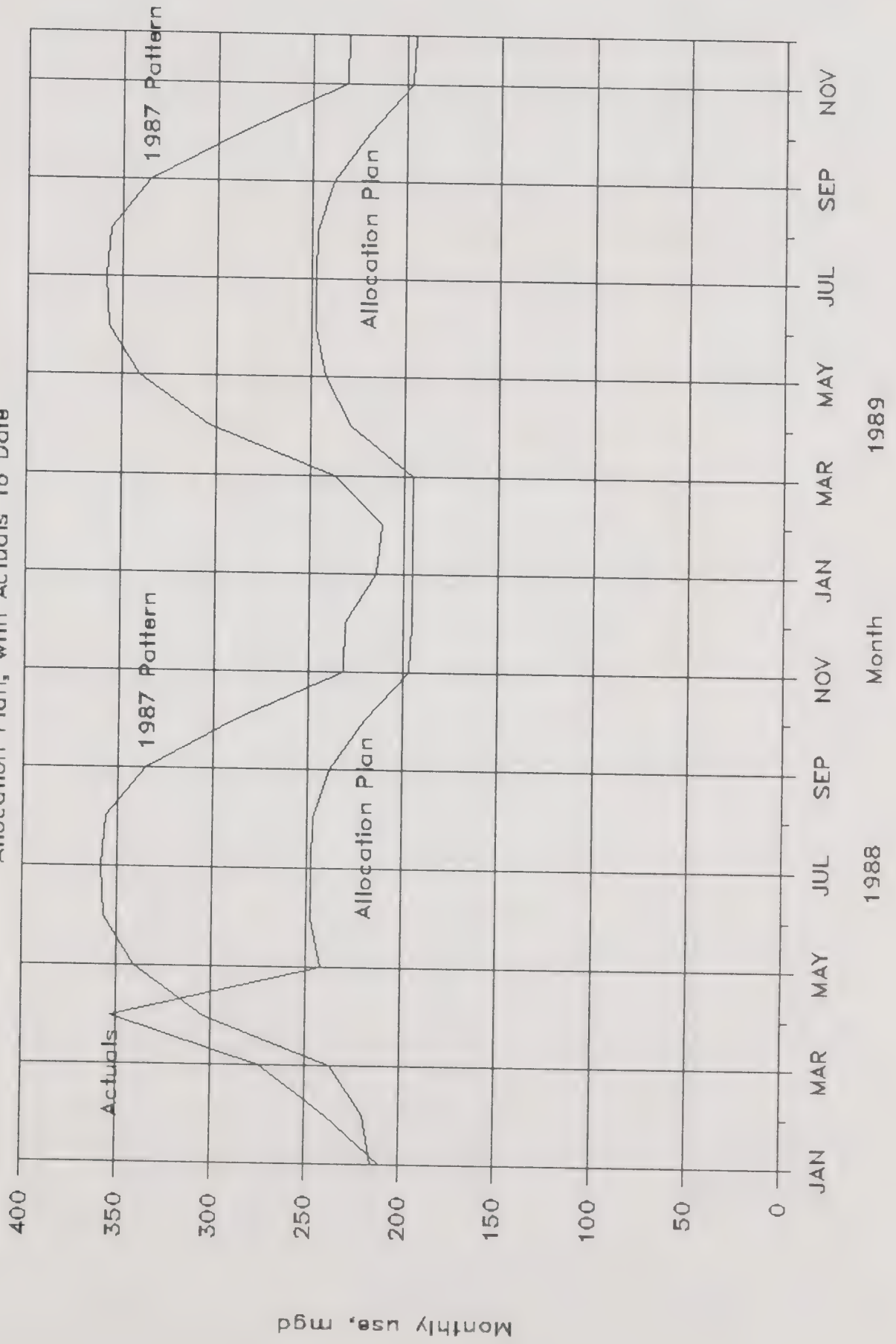
The level of water conservation proposed represents a necessary and prudent reduction given current storage conditions and the uncertainty in runoff that may occur in the coming year. The water supply analysis demonstrates that ordinary water requirements of the retail and wholesale customers cannot be satisfied without depletion of supply to the extent that there would be insufficient water for human consumption, sanitation and fire protection purposes. As such, a water shortage emergency condition exists in the San Francisco Water Department's retail and wholesale customer service areas. Although the shortage is not immediate, there is a threatened shortage based on reasonably estimated water supply and consumption figures.

WATER USE THROUGH DECEMBER, 1988



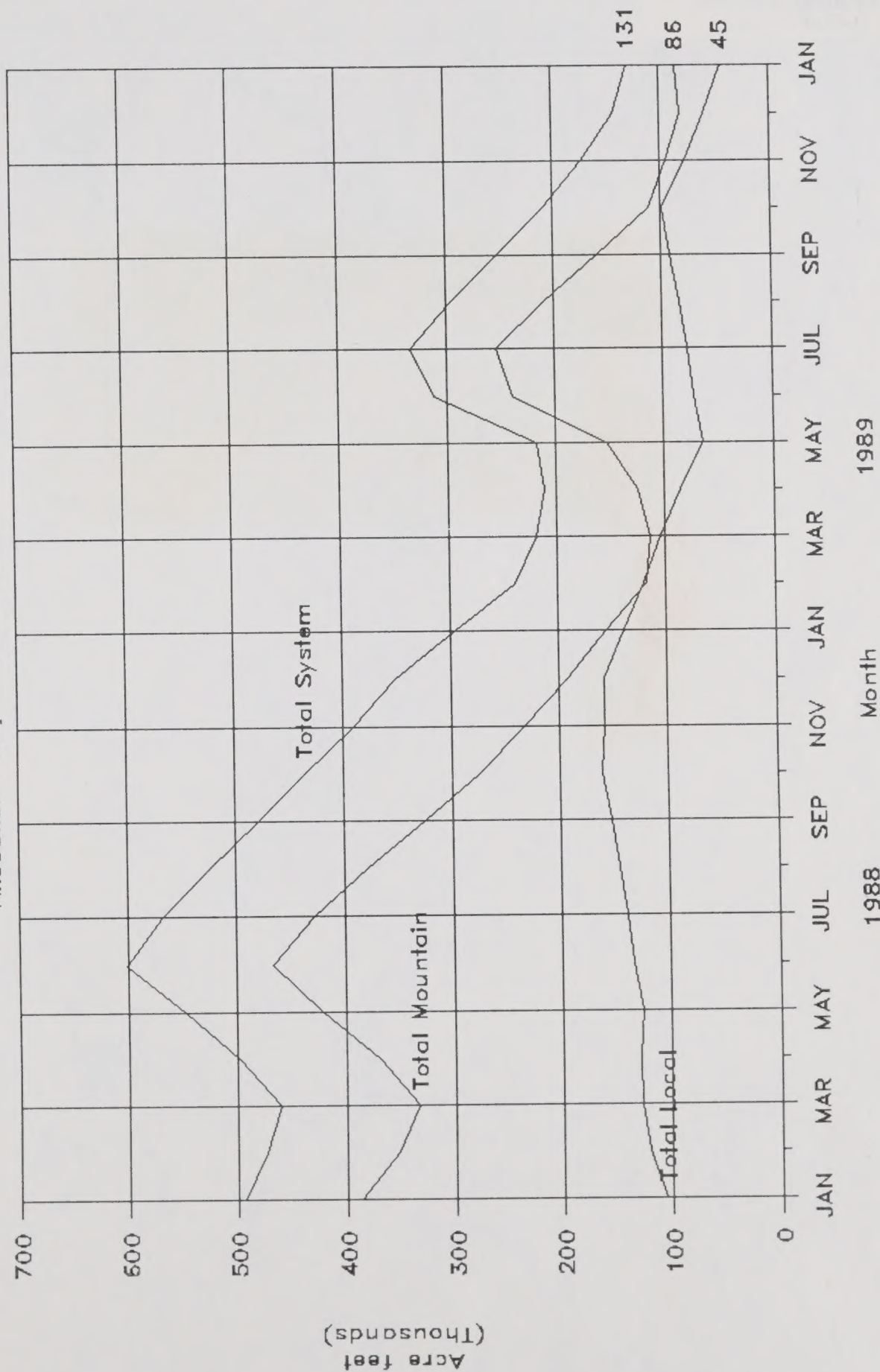
Water Use

Allocation Plan, with Actuals To Date



System Storage

Allocation Plan, with Actuals To Date



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